

1 1. A method for sterilizing a material comprising
2 at least one desired macromolecule, the method comprising:
3 providing said material at an initial pressure; and
4 increasing the pressure to an elevated pressure
5 sufficient to sterilize the material but insufficient to
6 irreversibly inactivate the biological activity of said
7 desired macromolecule, thereby providing a sterilized
8 material.

1 2. The method of claim 1, wherein the material is
2 provided at an initial pressure of about 1 atm.

1 3. The method of claim 1, wherein the material is
2 provided at an initial temperature in the range of from
3 about -40°C to about 95°C.

1 4. The method of claim 1, wherein the material is
2 provided at an initial temperature of about -40°C or lower.

1 5. The method of claim 1, wherein the material is
2 provided at an initial temperature of about 95°C or higher.

1 6. The method of claim 1, wherein the elevated
2 pressure is in the range of about 5,000 psi to about
3 120,000 psi.

1 7. The method of claim 1, wherein the desired
2 biomolecule is selected from the group consisting of
3 nucleic acids, proteins, lipids, carbohydrates, drugs,
4 steroids, and nutrients.

1 8. The method of claim 1, further comprising
2 decreasing the pressure to a decreased pressure, and
3 cycling the pressure between the decreased pressure and the
4 elevated pressure at least two times.

1 9. The method of claim 1, further comprising
2 decreasing the pressure to a decreased pressure, and
3 cycling the pressure between the decreased pressure and the
4 elevated pressure at least ten times.

1 10. The method of claim 8, wherein the decreased
2 pressure is half of the elevated pressure or less.

1 11. The method of claim 1, further comprising
2 warming or cooling the material prior to the pressure-
3 increasing step.

1 12. The method of claim 1, further comprising
2 warming or cooling the material after the pressure-
3 increasing step.

1 13. The method of claim 1, wherein the material
2 being sterilized is selected from the group consisting of a
3 biological sample; blood plasma, serum, or other plant,
4 animal; or human tissue; feces; urine; sputum; medical or
5 military equipment; a foodstuff; a pharmaceutical
6 preparation; ascites; and a vaccine.

1 14. The method of claim 1, wherein the material
2 being sterilized is initially contaminated with at least
3 one of a bacterium, a prion, a virus, a fungus, a protist,
4 a nucleic acid, and a protein.

1 15. A method for sterilizing a material initially
2 contaminated with at least one infectious agent selected
3 from the group consisting of a bacterium, a prion, a virus,
4 an infectious nucleic acid, and an infectious protein, the
5 method comprising:

6 providing said material at an initial temperature
7 and pressure; and

8 increasing the pressure to an elevated pressure
9 sufficient to sterilize the material, thereby providing a
10 sterilized material,

11 wherein said initial temperature is lower than 60°C.

1 16. The method of claim 15, wherein the material is
2 provided at an initial pressure of about 1 atm.

1 17. The method of claim 15, wherein the elevated
2 pressure is in the range of about 5,000 psi to about
3 120,000 psi.

1 18. The method of claim 15, further comprising
2 decreasing the pressure to a decreased pressure, and
3 cycling the pressure between the decreased pressure and the
4 elevated pressure at least two times.

1 19. The method of claim 15, further comprising
2 decreasing the pressure to a decreased pressure, and
3 cycling the pressure between the decreased pressure and the
4 elevated pressure at least ten times.

1 20. The method of claim 18, wherein the decreased
2 pressure is half of the elevated pressure or less.

1 21. The method of claim 15, further comprising
2 warming or cooling the material prior to the pressure-
3 increasing step.

1 22. The method of claim 15, further comprising
2 warming or cooling the material after the pressure-
3 increasing step.

1 23. The method of claim 15, wherein the material
2 being sterilized is selected from the group consisting of a
3 biological sample; blood plasma, serum, or other plant,
4 animal, or human tissue; feces; urine; sputum; medical or
5 military equipment; a foodstuff; a pharmaceutical
6 preparation; ascites; and a vaccine.

1 24. A method for sterilizing a material, the method
2 comprising:

3 providing said material at an initial temperature
4 and pressure;

5 increasing the pressure to an elevated pressure
6 sufficient to sterilize the material;

7 decreasing the pressure to a decreased pressure; and
8 repeating the increasing and decreasing steps at
9 least once, thereby providing a sterilized material,

10 wherein the initial temperature is about 40°C or
11 lower.

1 25. The method of claim 24, wherein the material is
2 provided at an initial pressure of about 1 atm.

1 26. The method of claim 24, wherein the elevated
2 pressure is in the range of about 5,000 psi to about
3 120,000 psi.

1 27. The method of claim 24, wherein the decreased
2 pressure is half of the elevated pressure or less.

1 28. The method of claim 24, further comprising
2 warming or cooling the material prior to the pressure-
3 increasing step.

1 29. The method of claim 24, further comprising
2 warming or cooling the material after the pressure-
3 increasing step.

1 30. The method of claim 24, wherein the material
2 being sterilized is selected from the group consisting of a
3 biological sample; blood plasma, serum, or other plant,
4 animal, or human tissue; feces; urine; sputum; medical or
5 military equipment; a foodstuff; a pharmaceutical
6 preparation; ascites; and a vaccine.

1 31. The method of claim 24, wherein the material
2 being sterilized is initially contaminated with at least
3 one infectious agent selected from the group consisting of
4 a bacterium, a prion, a virus, a fungus, a protist, an
5 infectious nucleic acid, and an infectious protein.